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Investigating the Physical Determinants of Social Capital and Their Implications for Sustainable Urban Development

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Abstract: The concept of social capital is gaining increasing recognition as a concomitant for social and economic development. Robert Putnam's (2000) exposition of the crucial correspondence between the decline of social capital on one hand and the economic lives of American people on the other received wide acclaim at home and abroad. Contemporary literature on development studies is equally replete with references to the World Bank's subscription to the value of social capital as an important factor in fostering sustainable development. The relationship between social capital and environmental action has equally been acknowledged. There is also an increasing realisation that the design and form of cities, neighbourhoods and individual buildings have significant implications on social capital as they can affect the way people interact and bond with each other and the sense of community among individuals (Dannenberg et al, 2003; Lindström et al, 2003). The fundamental premise is that some urban designs encourage social ties and informal contact among residents while others violate the evolutionary pattern of civicness within the urban setting. With all these acclaimed contributions of the design of the urban environment, it is imperative that its role in encouraging social and fostering sustainable development is given greater articulation and understanding. Currently, much of the work focuses on what individuals and groups can do, rather than what the physical environment should be, in order to encourage social ties and civicness. Thus, the aim of this paper is to identify and examine the key physical determinants of social capital within an urban development context. The methods used include critical analysis of scholarly work supplemented by results of a survey carried out by the authors in the United Kingdom. The paper argues that social capital is a subject of self-organisation, whose evolution to higher levels can be catalysed by the prevalence of a critical balance in the design of the physical urban environment.

Keywords: Social Capital, Determinants, Complexity, Sustainability

Introduction

SOCIAL CAPITAL IS increasingly becoming a dominant paradigm in the quest for social and economic development. The concept is increasingly seen as a powerful instrument in the achievement of many social goods, including people's health and happiness, levels of economic development, well functioning schools, safe neighbourhoods and responsive governments (Sander and Lowney, 2003). Robert Putnam's (2000) work on the decline of civic life in American communities received wide acclaim at home and abroad. Contemporary literature on development economics is equally heavy with refer-

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ences to the World Bank's perspective of the value of social capital in fostering sustainable economic development. In general terms, there is growing evidence that regions or countries with relatively higher stocks of social capital, in terms of generalised trust and widespread civic engagement, seem to achieve higher levels of growth compared to societies with low trust and low civicness (Brown and Asham, 1996; Knack and Keefer, 1997; Khrishna and Uphoff, 1999). Societies founded on networks of trust and co-operation can help to realise human potential.

This quantum appreciation of the role of social capital in fostering human progress has been paralleled with a fair amount of effort in the search for environmental factors that facilitate the emergence of social capital. Within the realm of urban development, it has been recognised that the design and form of cities, neighbourhoods and individual buildings have significant implications on social capital as they can affect the way people interact and bond with each other and the sense of community among individuals (Dannenberg et al, 2003; Lindström et al, 2003). The rationale behind this argument is that some urban designs encourage social ties and informal contact among residents while others do not. It is against this background that this paper aims to identify and examine the key determinants of social capital within an urban development context. Such parameters would contribute to the way urban environments are designed for a sustainable future. The paper is organised into four key parts. The first unveils the definitions of social capital and highlights its importance in the quest for sustainable urban development. The second narrows down to an analysis of those physical elements of the built environment that are perceived to have a bearing on the quantity and quality of social capital. These were assembled from a protracted literature review. This is followed by an analysis of the results of the surveys to try and validate the physical determinants of social capital. This involved interviews with and questionnaires from a selected group of experts and community leaders working in the area of social capital in the United Kingdom. The final part of the paper is a general discussion that champions the notion that social capital is more of a subject of self-organisation than necessarily a designed phenomenon.

Definition(s) of Social Capital

Social capital is generally perceived as a concept that straddles a range of disciplines and there is no single definition of social capital but the many definitions available can be pooled together into the four broad subject areas of anthropology, sociology, economics and political science, as illustrated in Figure 1.

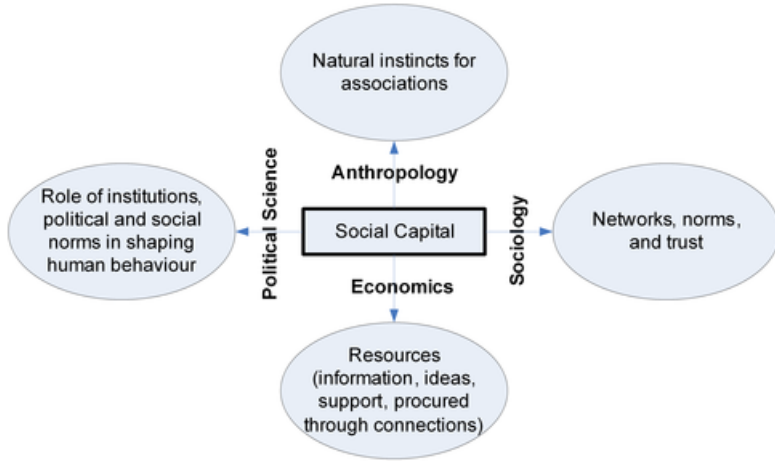

Figure 1: Definitions of Social Capital**,** [*Source: Adapted from Franklin, 2003*]

From an anthropological point of view, the concept of social capital is embedded within the notion that humans are gregarious entities with a natural instinct for associations (OECD, 2001). Humans are equipped with predispositions to learn how to: cooperate; discriminate the trustworthy from the treacherous; commit themselves to be trustworthy; earn good reputations; exchange goods and information; and divide labour (Ridley 1997). Fukuyama (1999) stressed the biological basis for social order and the roots of social capital in human nature.

The sociological definition of social capital pronounces social norms and the sources of human motivation (OECD, 2001). The emphasis is on the features of social organisation such as trust, norms of reciprocity, and networks of civic engagement (Putnam, 2000). The confident expectation that people and institutions will act in a consistent, honest and appropriate way is essential in ensuring that communities flourish. This is closely related to the political science literature which emphasises the role of institutions, political and social norms in shaping human behaviour (OECD, 2001). Recent work by the World Bank on the role of social capital in poverty reduction strategies and promotion of sustainable development has emphasised the role of institutions, social arrangements, trust and networks. The economic literature draws on the assumption that people will maximise their personal utility, deciding to interact with others and draw on social capital resources to conduct various types of group activities (Glaeser, et al, 2002). In this regard, the emphasis is on the investment strategies of individuals in the face of alternative uses of time (OECD, 2001).

Types of Social Capital

Three basic forms of social capital have also been identified: bonding; bridging; and linking (Woolcock, 1998), as illustrated in Figure 2.

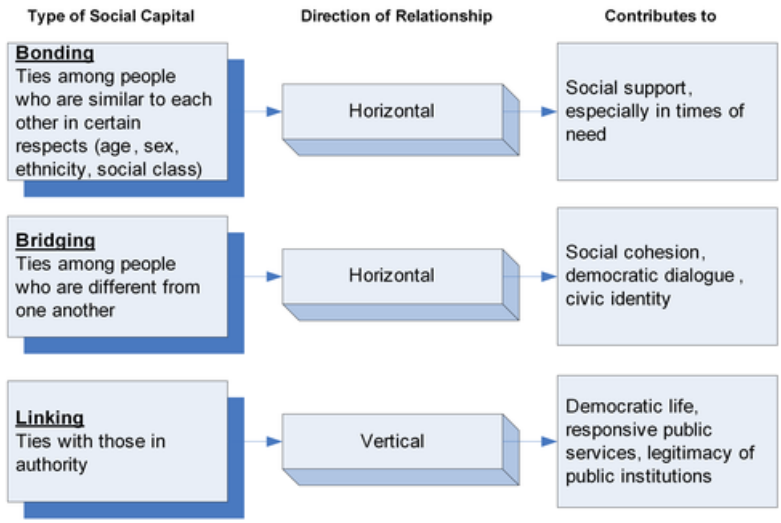

Figure 2: Types of social capital [*Adapted from Woolcock, 1999*]

Bonding Social Capital is inward looking and reinforces exclusive identities and homogenous groups. It refers typically to relations among members of families and ethnic groups. This form of social capital is effective in sustaining solidarity within the group, which is beneficial in providing support for group members (Jochun, 2005). Bridging Social Capital refers to relations with distant friends, associates and colleagues and is therefore more outward looking. This type of social capital is seen as more suitable for public policy realm, because it tends to bring people from different social groupings together, promoting tolerance and cross-cultural understanding (ibid). Linking Social Capital refers to relationships between different social strata in a hierarchy where power, social status and wealth are accessed by different groups (OECD, 2001). Positive examples of Linking Social Capital include shared habits of participation in civic affairs, and open and accountable relationships between citizens and their representatives (Roberts and Chada, 2005; Halpern, 2005).

In the face of the diversity of perceptions about of social capital, it appears that the definition of the concept remains at the whims of the analyst. In this paper, the definition from the sociological literature is considered more appropriate to the concerns of sustainable urban development. Thus: social capital refers to the collective value of all social networks and the inclinations that arise from these networks to do things for each other, i.e. social networks and the norms of reciprocity and trustworthiness that arise from them (Putnam, 2000).

One important term in the above definition that merits explicit pronouncement is collective value. In other words, the utility of social capital lies not in its own right but in the extent to which it adds value to the socio-spatial setting in which it is embedded. It should thus be recognised that social capital is not a lone-standing, isolated concept but one that has to be viewed within the context of its contribution to human progress. It is in this light that the following section considers the relevance of social capital in the relentless search for sustainable urban development.

Social Capital and Sustainable Urban Sustainability Development

One useful way to discuss the utility of social capital is to reflect on the four schools of anthropology, sociology, economics and political science identified with the definitions of the concept above. Research evidence has demonstrated how social capital affects the well being of individuals, organizations and nations (Portes, 1998). From an economics point of view, studies suggest that social capital makes workers more productive, firms more competitive and nations more prosperous (Putnam, et al, 2004). As a common good, social capital also has positive externalities in that the benefits are not only limited to those within the networks, but also extend to those outside the system. The result is that when social capital increases in a particular community, there is a ripple effect that straddles a wider cross-section of a community, including to those individuals who are not practically participating in the networking game.

Psychological research indicates that high stocks of social capital can make individuals less prone to depression and more inclined to help others, while in the same vein epidemiological reports show that social capital decreases the rate of suicide, colds, heart attacks, strokes and cancer and improves individuals' ability to fight or recover from illnesses (Putnam, et al, 2003; Gwillliam, et al 1998, Barton, et al, 2000). In fact, the relationship between social capital and health has been well documented since 1901 when Emile Durkheim identified a connection between suicide rates and the level of social integration (Wasserman, 1984). Studies in the field of sociology suggest that social capital reduces crime, juvenile delinquency, teen age pregnancy, child abuse, welfare dependency and drug abuse, and increases academic performance among students (Putnam, 2002; Savage, 2001). Political science literature is equally replete with evidence suggesting that extensive social capital makes government agencies more responsive, efficient and innovative (Portes, 1998; Putnam, et al, 2004). It is increasingly becoming clear, therefore, that social capital has an enormous array of practical benefits to individuals and to communities. Its importance should therefore also be given appropriate attention as a concomitant for achieving sustainable urban development.

The World Bank has pointed to the growing body of evidence that the size and density of social networks, institutions and the nature of interpersonal interactions are significant determinants of the sustainability of development projects and initiatives (Simpson, 2005). Pretty (2003) equally upheld this notion by suggesting that the term social capital captures the idea that social bonds and norms are critical for sustainability. The argument is that in places where social capital is high, people will have the confidence to invest in collective action on the understanding that others will do the same.

Another useful way of examining the place of social capital in urban sustainability is to look at the UK government sustainable development policy particularly the sustainable communities' agenda, which defines sustainable communities as:

> *"places where people want to live and work, now and in the future. They meet the diverse needs of existing and future residents, are sensitive to their environment, and contribute to a high quality of life. They are safe and inclusive, well planned, built and run, and offer equality of opportunity and good services for all" (ODPM, 2003).*

In qualifying the agenda, the UK government indicated that for communities to be sustainable, they must offer: decent and affordable homes; good public transport; schools; hospitals;

shops; and a clean and safe environment (ibid). What is discernible from the above definition is a wide range of socio-economic goals: low crime; good health, well-functioning schools; diversity; good environment; transport and communication networks; and many other needs and demands of modern society. Many of these concerns are the very characteristic features of communities that are well-endowed with social capital as suggested in the foregoing discussions.

Recognising the role of social capital towards achieving sustainable urban development is perhaps the easiest part - what is rather more challenging and where research effort should be targeted is in the cultivation of this kind of capital. Emerging questions that need addressing include: Can social capital be created? What are the determinants of social capital in an urban development context? How much social capital is appropriate for the achievement of a sustainable urban environment? The next section dwells on these and other related questions in the quest for solutions to the multifaceted sustainable development question.

Social Capital and the Physical Urban Environment

Much of the work on the factors that determine social capital is limited to the 'softer' (social) issues rather than the physical environment (Christoforou, 2005; Glaesier, et al, 2002; Woolcock, et al, 2004). Perhaps the most significant single piece of work in this regard is that of the Saguaro Seminar, an initiative of Professor Robert Putnam at the John F. Kennedy School of Government at the Harvard University. The project focuses on expanding knowledge on social capital and devising strategies to increase civic engagement (Putnam, et al, 2004). The initiative has so far put together what they call "150 things you can do to build social capital" (Saguaro Seminar, 2000). In this report, called 'Better Together', the Saguaro Seminar examines social capital and makes recommendations on methods to replenish the stock in five categories: the work place; the arts; politics and government; religion; and youth and education. Though robust in terms of depth and breadth of analysis, this research, like many other studies alluded to above focus on what individuals and groups can do in order to enhance the stocks of social capital. This paper goes a step further than these previous efforts by asking not what the individuals and groups can do, but what the physical urban environment should be in order to encourage the emergence of social capital.

There are two key points that count as the gateway to an effective analysis of the relationship between urban development and social capital. One is to recognise that some designs of urban development encourage social capital while others do not (Leyden, 2003). The second is that encouraging social capital entails facilitating physical interaction among community members. This is because at the centre of social capital are the relationships between individuals and groups. Building these relationships can occur in a variety of ways ranging from the more intentional ones to serendipitous conversations between two (or more) people talking about their experiences, belief systems, values or concerns (Sander and Lowney, 2003). It is through these (repeated) conversations and interactions that the seeds of social capital geminate and the design of the physical urban environment can act as the fertile grounds to facilitate growth. Table 1 summarises some of the physical determinants of social capital unearthed from protracted literature search and review by the authors.

Table 1: Determinants of social capital

Determinants	Explanations
Pedestrian-oriented designs	Decline of daily walking and cycling associated with lower social capital
Mixed-use and clustered developments	Limited household variety and mix discourage social capital. Clustered developments maximise number of people within walking distance. Social polarisation is identified with large estates in outer suburbs and a particular social class
Proximity to public transport	Increases physical interaction
Effective lighting	Safety and security issues
Public spaces	Increase in social interaction
Houses with front porches	Increases in social interaction
Sidewalks	Increases permeability and therefore interaction
Open space designs	As opposed to gatedness
Proximity to local amenities and infrastructure	Local tavern, local coffee shop, post office, schools, police station, resource centres, etc within waling distance
Mixed use recreational facilities	Recreational facilities meeting the requirements of all social classes have the potential of enhancing interaction
Children's play areas	Both the children and their parents / guardians will have a chance for physical interaction

The above list is not meant to provide a complete inventory of the determinants of social capital in an urban development context. It is rather the starting point for an analytical framework of this nature that has suffered relative paucity of coverage in the rise to prominence of the concept of social capital. It will be recognised that many of the factors identified in the table relate more to residential areas than any other form of the urban existence. This is because much of the social capital is 'built' in places (neighbourhoods) where people live, although work places also account for a considerable amount of the social capital enabling environment.

A validation exercise was conducted by the authors in 2007 to confirm the extent to which the above physical factors are upheld by the experts working in the field of social capital in the United Kingdom. The survey involved academics, central and local authority officers, private sector consultants as well as members of the voluntary and community sectors. A total of 100 respondents were targeted through a stratified sampling technique. Although the response rate was low (at 20%), the results of the surveys are somewhat revealing, as shown in Figure 3 below.

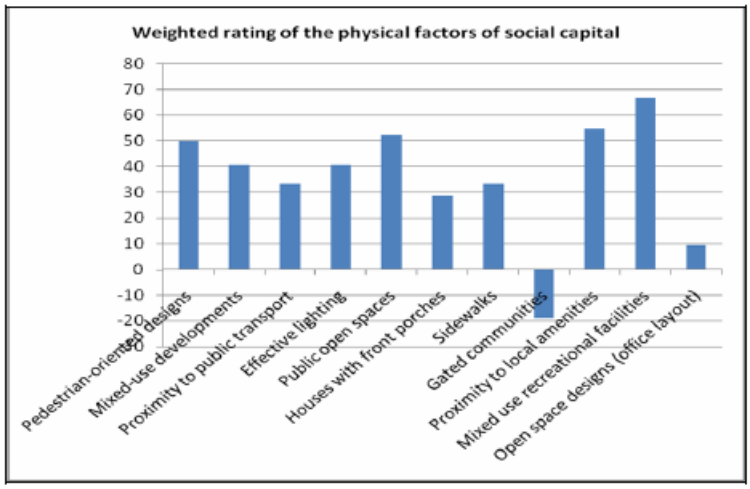

Figure 3: Physical Determinants of Social Capital – Survey Results

The results of the validation exercise suggest that, although differently rated, many of the factors identified in the literature are those that are perceived by the research and practice community as the physical factors that influence the emergence of social capital. The only item that stood out as a 'non-factor' of social capital is the concept of gated communities. There was an overwhelming agreement among the respondents that gatedness does not lead to higher levels of social capital. A closer look at some of the above elements should reveal important insights into the auspicious conditions for the evolution of social capital.

Pedestrian-oriented Designs

The single most significant piece of work on the relationship between social capital and the built environment that the authors came across is by Leyden (2003), who conducted a study to examine whether pedestrian-oriented, neighbourhoods encourage enhanced levels of social capital. Using data obtained from a household survey that measured the social capital of citizens living in selected neighbourhoods in Galway, Ireland, Leyden was able to demonstrate that persons living in walkable neighbourhoods have higher levels of social capital compared with those living in car-dependent suburbs. Dispersed, car-dependent neighbourhoods tend to separate people from each other, putting them in suburbs remote from work, shops and leisure, and are thus partly responsible for breaking up communities (Appleyard, 1981). It was discovered that respondents living in walkable neighbourhoods were more likely to know their neighbours, participate politically, trust others and be socially engaged. In a well-designed, walkable and neo-traffic-free neighbourhood, the incidences of traffic accidents is relatively mitigated so much that residents (especially the elderly and those with little children) feel safer to walk the streets and in the process establishing informal networks. Such levels of civicness have also been identified with the new urbanism movement (Dutton, 2001) expressed in such design philosophies as mixed use developments.

Mixed-use and Clustered Developments

Mixed-use developments can be defined as developments comprising more than one use and value on a single plot or within a single building or an area where site and buildings of different uses and values are grouped together (DFID, 2000). Cluster developments are described by the Urban Task Force (1999) as clear urban districts and distinct neighbourhoods. In this form the design philosophy is to develop a series of inter-related neighbourhoods around a district centre, with the ultimate goal of maximising the number of people within walking distances of the district centres. In this regard, density is a key concern in the design of neighbourhoods and cities in as far as these relate to social capital. Although higher densities may cause psychological tension, they can also foster social interaction (Kang, 2006). Conversely, physically isolated communities tend to be characterised by diminished civicness (Fowler, 1992). Density is not synonymous with crowdedness, which has its own negative consequences, but rather suggests the need for a critical balance of connectivity that encourages social interaction without compromising the health and well-being of communities. This can be achieved, for example, by dividing a large neighbourhood into several mini-neighbourhoods so as to stimulate interaction (Newman, 1996).

There is considerable evidence suggesting that mixed-use developments wherein residents live, shop and work locally increase the levels of social interaction (Leyden, 2003; Sander, 2002; DFID, 2000). It is under such a cocktail of private and public life that residents tend look 'after their streets' and develop networks of trust and confidence (Jacobs, 1969). Zoning (planning) regulations can therefore influence levels of social capital by demarcating the city into different functional areas, which may lead to the separation of working from living, of living from entertainment. Sander (ibid) was, however, quick to point out that the relationship between social capital and the New Urbanism of mixed-use developments may not be as straight forward as suggested. He argues that many residents of these perceived socially-compliant neighbourhoods do not have employment locally and therefore need to commute. Moreover, he argues, although the developments generally contain retail shops, they are rarely on the scale of the large global brand supermarkets that many residents wish to be associated with as they climb high on the ladder of affluence. However, what this author appears to have neglected to emphasise is that this 'New Urbanism' is not a panacea to the dwindling civicness of communities but a positive contribution to a phenomenon that is essentially a function of multiple interrelated dynamics, many of which lie outside the domain of the built environment. Although the built environment cannot, on its own, predetermine the evolution of social interactions, it can enhance the opportunities for creating social networks and social interactions, which are fundamental building blocks for social capital (Kang, 2006). Thus, although the contribution of mixed-use developments to social capital may not be as flamboyant as many scientists would like to observe things, it certainly is a factor especially if one accepts the hypothesis that social capital is an emergent phenomenon with multiple causal mechanisms where the whole is not equal to the sum of its parts. Similarly, seemingly insignificant factors such as sidewalks play an important role in connecting people.

Sidewalks, Front Porches and Parks

Emerging research suggests that good community design, including sidewalks, front porches, public meeting places, open space rather than gatedness, and public multi-use parks, may

foster social capital by promoting frequent interactions among members of a community. A porch designed in front of housing units and facing the streets leads to increased social interaction (Kim, 2001). All these are factors that help create neighbourhoods that have more opportunities and places for residents to connect: e.g., front porches, sidewalks, and public multi-use parks (Sander and Lowney, 2006; Leyden, 2003). These must be designed in such a way that they encourage walkability through safety and security assuring environments, such as improved lighting. It is therefore increasingly recognised that the design of buildings and housing estates can help reduce anti-social behaviour as well as crime and the fear of crime. When and where there is less crime, people will be able to walk freely within their neighbourhoods, which can have the effect of helping them connect to each other through informal meetings. *Designing Out Crime* has consequently become a popular theme within neighbourhood management circles in local authorities and other public bodies (Crowe, 2000). 1). An overwhelming amount of research suggests that the emerging concept of gated communities poses a potential threat to the evolutionary pattern of social capital by violating the space requirements for social interaction (Moobela, 2003; MacLeod, 2003; MaKenzie, 2003). Parks can play a significant role in establishing and supporting social capital. In a study conducted in 2002 by Australia's Health Promotions International, it was established (rather re-affirmed) that playing with children and walking dogs in parks is one of the effective informal ways of bringing people together (Baum and Palmer, 2002). There are many other urban development design parameters that were identified by interviewees in this study as good practice for social capital, such as height of buildings, public houses, corner shops, service clubs and sporting grounds. The building as the basic physical unit of an urban development can equally influence the level of social interaction through such parameters as safety, security and belonging (Kang, 2006). Research has shown that within a multi-story building, the number of neighbours an individual knows is inversely proportional to the height of the building, i.e. the number of people one knows decreases as the height of a building increases (Newman, 1972).

Rays of Light from Complexity Theory

The first question to address in this section is whether social capital can be created or not. Looking at the key traits of social capital outlined above, such as trust and norms of reciprocity, it immediately becomes apparent that the totality of the concept is not a subject of creation but of something else. As the greatest rival of creation is evolution, it makes sense to look to this theory for an alternative explanation. One of the fascinating things about social capital is that its features (trust, for example) do not need to be imposed upon people. Although people's minds are equipped with selfish genes, they have also been built to be social, trustworthy and cooperative (Ridley, 1997). Thus, the cultivation of social capital is not so much about building external institutions and structures, but creating the conditions for its emergence. The supremacy of interaction over self-interest has also been heavily pronounced by the emerging science of complexity.

Complexity theory looks at certain social and physical systems as complex and adaptive, made up of large numbers of interacting agents. The fundamental argument is that if there is any coherence (order) in the system, it owes its origin to the interaction among the individual agents themselves (Waldrop, 1992). Interaction is therefore vital to self-organisation of the system as a whole. The process of seeking mutual accommodation and self-consistency

allows the entities to transcend themselves, acquiring properties that they might never have possessed in their individual capacities. Similarly, it is argued in this paper that social capital is an emergent phenomenon which is capable of advancing from low to higher levels of complexity in the midst of the enabling socio-spatial environment. One would perhaps not exhaust this topic without mentioning (in fact starting with) Darwinism in the biological world, where order is defined in terms of diversity of entities. In the social realm, Durkheim (1893) similarly defined order as the emergence of social entities. Building on these earlier conceptions, Sommerhoff (1950) and Ashby (1962) defined order not only by reference to entities but also in terms of connections among those entities. Ashby (1962) in particular argued that order exists in the midst of entities if only the enabling environment is availed. This led him to conclude that 'environmental' conditions are the causes of order and that this order does not emerge if the environmental conditions are chaotic. If one accepts the hypothesis that social capital is a subject of emergence rather than design, the immediate questions that arise include, what are the enabling conditions for its emergence, and at what level are they said to be chaotic or out of balance? Tackling the first question impels us to engage in an investigative judgement of the determinants of social capital in an urban development context.

Despite the multidimensionality of the concept of social capital, clarity in the understanding of its role in urban development can still be achieved through careful selection of the key determinants without recourse to bounded rationality. This is supported by Glasson, et al (2005) who argued that although there is a need for holism, the impracticalities of comprehensiveness when dealing with sustainable urban development implies that the methods may not be required to address all activity-issue-scale elements. Rather, they argued, it is justifiable to focus on those elements thought to be most significant. From a carefully thought-out shortlist of the determinants of social capital, it would be feasible to derive a predictive model of the concept that can be incorporated within the design philosophies for urban developments. Although such a predictive model of social capital is still a subject of further research, the authors feel entitled to suggest the physical factors outlined in the paper as the starting point for the construction of such a model.

Conclusions

Social capital has continued to be pronounced by both the research and policy communities as an important antecedent in the quest for human progress. The relative elusiveness of social capital has, however, historically exposed the concept to a rather poor coverage in many spheres of social enquiry. Its natural place in yet another nebulous concept of sustainable development is only beginning to blossom as the need to embrace more holistic approaches becomes inevitable. The recognition that the social, economic and environment dimensions of sustainable development are heavily interwoven demands greater clarity in understanding the connections. It is in this light that the connection between social capital and urban development needs to be given appropriate attention if the former is to be tapped as a crucial element in fostering sustainable urban development. Although by no means exhaustive, the (physical) determinants of social capital identified in the paper should be seen as a starting point in the search for the enabling physical urban environment for the emergence of social capital. An important theoretical pillar towards this goal is to acknowledge that social capital

is a subject of emergence, whose evolution to higher order can be facilitated by the providence of a critical balance in the design of the physical urban environment.

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